WASHINGTON
Published by the National Geographic Society

VOL. IV, PP. 101-116, PL. 17 MARCH 31, 1892

THE

NATIONAL GEOGRAPHIC MAGAZINE

THE MOTHER MAPS OF THE UNITED STATES.

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(Presented before the Society January 22, 1892.)

INTRODUCTION.

We read of topographic maps and of geographic maps. Both of these classes of maps represent similar features—the drainage and other bodies of water, the relief of the earth's surface, and the artificial features, such as railroads, roads, towns, houses, etc. The distinctions between them are merely those of scale and of area represented. A map on a small scale and covering a large area is commonly known as a geographic map.

Mother maps are those made from original sources of information. Commonly they are the maps for the production of which a survey was carried on, while compiled maps are secondary productions, being reduced or changed in certain respects from the mother maps. Topographic maps may be mother maps or compiled maps. Geographic maps are in most cases compiled maps.

Most of the countries of Europe have been surveyed under a uniform plan or system and mother maps produced therefrom. In these cases the mother map is everywhere of uniform quality and character. In the United States, on the other hand, many partial surveys have been made under independent authorities

and of widely differing degrees of accuracy, and the maps resulting therefrom differ in scale and value.

It is my purpose to sketch the principal of these surveys, characterizing the methods employed and the accuracy and value of the maps which have resulted from them, in order to learn what parts of the country have been well mapped, what parts have been indifferently mapped, and what parts have not been mapped at all. Such surveys have been executed under authority of the general government and of state governments and have been carried on by private enterprise.

Surveys of the United States Government.

The Coast and Geodetic Survey.—The most prominent organization under the general government, and that one which is executing the most accurate work, is the United States Coast and Geodetic survey, which, commencing its actual work in 1832, has continued down to the present time. During this period nearly the entire coast line of the Atlantic, Gulf and Pacific, with the exception of the coast of Alaska, has been mapped, together with a strip of inshore topography ranging from half a mile to five miles in breadth. The area of topographic surveys is not extensive, being at the present date only about 34,000 square miles. In addition to this work, triangulation has been extended inland in various directions for a number of different purposes: It has been extended southwestward along the Appalachian mountains for the purpose of furnishing a suitable control for the work along the southern coast; it has been extended westward from the Atlantic coast in the neighborhood of the 40th parallel of latitude to central Kansas, and from the Pacific coast eastward to eastern Utah for the purpose of ultimately joining together by triangulation the work upon the eastern and western coasts. For assisting in state surveys, triangulation has been done in the interior in many of the states, among which are New Hampshire, Massachusetts, New Jersey, Wisconsin, Indiana, Kentucky and Tennessee. Besides all this triangulation, numerous astronomic determinations have been made in the interior.

The triangulation of this organization is of the highest order of excellence. Topographic details are mapped by the plane-table. The planetable sheets are in the main made on a scale of 1 : 10,000, or about 6 inches to 1 mile, and are published on

various scales from 1 : 10,000 to 1 : 80,000. Contour lines at vertical intervals of 10 or 20 feet are located on the planetable sheets. The small scale charts are published in hachures, those on the larger scales commonly in contours.

Geological Survey.—The United States Geological survey is the only organization which has ever undertaken to map the United States under a comprehensive and well defined plan, and it has surveyed a greater area than any other organization. It was formed in 1879 upon the discontinuance of the three rival western surveys, namely, the Hayden, Wheeler and Powell surveys. At first it was restricted in its operations to the public domain, but was soon authorized by law to include the entire United States. The work of topographic surveying on a large scale, with a view to mapping the entire country, was commenced in 1882 and has been prosecuted actively since that time.

The work, wherever practicable, is controlled by triangulation, which, though not of geodetic refinement, is suitable for the control of the maps upon the adopted scales. Where it is not practicable to carry on triangulation for control, traverses are run for that purpose with instruments of considerable power and with all possible precaution to prevent the accumulation of sensible error.

Aside from the primary control, location is effected by graphic methods. The planetable is used for secondary triangulation and for traversing. Heights are measured with the spirit level, by vertical angles, and by aneroid. The maps are now published on two scales, one of 1 : 62,500, or about one mile to an inch, the other of 1 : 125,000, or about two miles to an inch. Considerable work has been executed on the scale of 1 : 250,000, but that scale has been abandoned. Relief is expressed by contours, the intervals ranging from 5 feet up to 200, depending upon the scale and upon the degree of relief of the country.

The Geological survey has worked in coöperation with four states, namely, Massachusetts, Rhode Island, Connecticut and New Jersey, and has completed the surveys of these states. It has also surveyed large areas in New York, Pennsylvania, Maryland, Virginia and West Virginia, the southern Appalachian region, Louisiana, Texas, Arkansas, Illinois, Iowa, Wisconsin, Missouri, Kansas, and the western states and territories generally. Altogether an area of 550,000 square miles has been surveyed. The maps are engraved on copper. Three plates

are required, the culture, drainage and relief being printed in different colors.

Lake Survey.—The shores of the Great lakes and of the St Lawrence river have been mapped, together with a narrow strip of topography, by the organization known as the United States Lake survey, which was under the control of the Engineer corps of the United States army. Besides mapping the shores of the lakes, this organization carried a belt of triangulation from the head of lake Michigan to that of lake Erie across the southern end of the peninsula of Michigan, and another strip of triangulation through eastern Illinois to the neighborhood of Vincennes, Indiana, and located by astronomic means a large number of points in the lower peninsula of Michigan. All these determinations of positions were connected directly with section corners of the United States Land survey, to be hereafter described.

The work of this organization was of a high order of excellence, comparable in most respects to that of the United States Coast and Geodetic survey.

Engineer Surveys.—In connection with river improvements, the United States Engineer corps has made surveys of many navigable rivers. In many cases these are merely local surveys covering trifling areas, but in the cases of the lower Mississippi and the Missouri river excellent maps, controlled by triangulation, have been produced.

Army Explorations.—The western part of the United States has, ever since its acquisition, been a favorite field for exploration and survey. For a long time the War department monopolized this field. The explorations began with the famous expedition of Lewis and Clarke in the early years of the century, followed by those of Long, Pike and Fremont. Then, in the early fifties, came that remarkable series of explorations known as the Pacific railroad surveys. These were followed by numerous other army expeditions, some of which are of comparatively recent date. Altogether a large number of military parties have traversed the Cordilleran region and each of these expeditions has furnished more or less geographic information.

Their methods of survey were, in nearly all cases, similar: A traverse survey of the route was made, using the compass for directions. Distances were measured by the revolutions of a wheel or by estimates based upon the time of travel. Points off the line were intersected upon and thus located roughly with refer-

ence to the line of travel, and, resting upon this rather imperfect skeleton, the topography in sight of the line was sketched, while that out of sight of the line was often added from the statements of hunters, trappers and Indians. These lines were checked at intervals by astronomic determinations, the latitude being determined by altitudes of the sun or a star, the longitude by moon culminations or lunar distances, or by chronometer.

Many such lines were run in various directions over the Cordilleran region. From such as were at that time available, General G. K. Warren constructed in 1857 the first map of the western United States which was in any way worthy of the name of map.

Nearly all of the areas thus explored have since been resurveyed by more accurate and detailed methods.

Survey of the 40th Parallel.—In 1867 Mr Clarence King, a civilian in the employ of the War department, organized a survey for the exploration of a strip of country adjacent to the line of the Union Pacific and Central Pacific railroads, from the longitude of Cheyenne on the east to the eastern boundary of California on the west, and about 100 miles in breadth from north to south. This work, which was completed in 1871, comprises an area of about 87,000 square miles. It was published on a scale of 4 miles to 1 inch in approximate contour lines 300 feet apart. The work was controlled by triangulation; heights were measured by barometer and by vertical angles, and sketching was done in note books, the sketches being adjusted to the locations in the office.

Surveys west of the 100th Meridian.—This was the most extensive of the surveys within the Cordilleran region. It was commenced in 1869, and for several years was carried on by traverse methods similar to those followed by the other explorations under the War department, and the maps produced were published on a scale of 8 miles to an inch, the relief being expressed by hachures. In 1873–'4–'5 the methods of this survey were radically improved. A system of control by triangulation was adopted, the scale of publication was increased from 8 to 4 miles to an inch, and areas, instead of lines of travel, were mapped. This survey was discontinued in 1879. The entire area surveyed is said to have been 361,000 square miles, of which 103,000 square miles was on a scale of 4 miles to an inch, the balance being on that of 8 miles to an inch.

The Hayden Survey.—This organization, which was initially a geologic exploration, was instituted in 1867. No topographic work was done by it until 1871, when certain route surveys were made in Montana, Idaho and Yellowstone park. In 1872 similar surveys were carried on in the same region. Between 1873 and 1876, inclusive, the work of this organization was confined to Colorado and adjacent strips of Arizona, New Mexico and Utah, while in 1877 and 1878 work was done in Wyoming, Idaho, Utah and Yellowstone park. During 1873 and following years the methods of survey were greatly improved. The work was controlled by triangulation originating in measured bases, within which was a secondary triangulation, by means of which nearly all control points were located; traverse being used to locate only minor details of roads, streams, etc. Sketching was done in note books, and the sketching was adjusted to the control in the office. The maps were published on a scale of 4 miles to an inch, in approximate contour lines 200 feet apart. Altogether an area of about 100,000 square miles was surveyed by this organization, which was discontinued in 1879.

Powell Survey.—This survey originated in an exploration of the Colorado river, commenced in 1867. After the completion of this exploration, systematic work was undertaken in the territory of Utah, and up to the time of the discontinuance of the survey in 1879 about 67,000 square miles had been surveyed, comprised in Utah and the northern part of Arizona. The methods of work were quite similar to those of the Hayden survey, but with this notable exception, that the minor control and the sketching were done upon planetables, the sketching being adjusted to the control in the field upon the stations. The maps were published by the present Geological survey on a scale of 1:250,000, the relief being expressed by contours 250 feet apart.

Boundary Surveys.—The boundary lines of many of the western states and territories have been run at the expense of the general government, and in connection with these boundary surveys narrow strips of topography have been mapped.

In 1875, when public attention had become drawn to the gold deposits of the Black hills, an exploration of this region was undertaken by the Indian bureau under the authority of the general government. This exploration included both the preparation of a topographic map and a geologic examination. The

map was produced on a scale of 4 miles to an inch in approximate contour lines.

Public Land Surveys.—In the latter part of the last century a system was devised for the subdivision of the public lands held by the United States, for the purpose of cutting them up into convenient parcels for sale or other mode of disposal. The system then devised has been extended with little modification over all the states, with the exception of the thirteen original colonies, together with Maine, Vermont, Kentucky, Tennessee and Texas. Many of the states have been surveyed entirely under this system, while the others have been in greater part surveyed.

The method of subdivision is a very simple one, and is learned by every western child in connection with the alphabet. An initial point is selected from which a base line is run east and west and a principal meridian is run north. At intervals upon this base line, ranging from twenty-four miles upward, other lines are run north, known as guide meridians, and at similar intervals on the principal meridian secondary east-and-west lines are run, known as correction lines. The blocks of country thus laid out into approximately rectangular shape are subdivided into approximate squares by running lines northward, eastward, and westward at intervals of six miles, forming what are known as townships. Each township is then subdivided by means of lines run at every mile in both directions, forming sections, each section being approximately a mile square. The north lines are theoretically run on true meridians and therefore converge, the convergence increasing from the base line northward until a correction line is reached. Upon the correction line a new start is made, the townships and sections resuming their former bases of six miles and one mile respectively.

The principal and guide meridians, the base lines and correction lines, as well as all other township lines in this work, are run by solar compass, and distances are measured by chain with considerable care. The subdivision of townships into sections is generally done with a compass, and the chaining is executed with less care. The accumulated errors in the survey of a township are thrown into the northern and western tiers of sections, culminating in the northwestern corner.

In the prosecution of these surveys no attention has been paid to geographic positions. The initial points have been selected arbitrarily, and it is only by connecting these surveys with posi-

tions determined independently that they have been located. Such determinations have been made in abundance by one means or another, and they are well distributed; so that for maps on small scales there is no difficulty in locating these surveys.

As these surveys have been made merely for the purpose of subdividing the land, little attention has been directed toward making them available for the production of maps. The instructions under which they have been made, however, require that the points of crossing of all streams by the lines of survey be noted, together with the directions of the streams; that all streams above a certain breadth, as well as the borders of all lakes and ponds, be traversed; and that the limits of all swamps and marshes and timbered lands be noted. Had these instructions been everywhere carried out a large amount of geographic information would have been gathered; but unfortunately they have not been fully carried out, and hence the township plats differ greatly in the amount of information which they present. These plats are made on a scale of 2 inches to a mile, a scale many times greater than the degree of detail upon them requires. From these plats, with the addition of information from other sources, the General Land office prepares and publishes a series of very useful state and territorial maps on scales ranging from ten to eighteen miles to an inch, and a map of the United States upon a scale of about 40 miles to an inch.

There is another group of maps published by the general government, the material of which is, in the main, compiled, but which contains certain elements of originality. These are the postal-route maps which are prepared by the Post-office department for illustrating the location of post-offices and the lines of transportation of mails. The natural features of these maps are of course compiled. The boundary lines of counties, on the contrary, are in the main laid down directly in accordance with statute. The location of railroads is effected mainly by means of plats furnished directly from the railroad surveys, and the location of post-offices is in a corresponding measure derived from similar sources.

With the exception of a few minor matters, the above list covers the survey works and the sources of geographic information furnished by the general government. We turn next to the work done by the various state governments.

STATE SURVEYS.

New Hampshire.—This state supported recently a geologic survey, which undertook the preparation of a topographic map, a work which was effected mainly, however, by compilation, little original work being done. A number of positions in the state were obtained from the United States Coast and Geodetic survey and to these were fitted traverses of roads which had previously been surveyed by private enterprise. Upon this skeleton a somewhat pretentious contour map was produced by using for heights the profiles of the railroads of the state, supplemented by numerous aneroid measurements made by the geologic survey. This map was printed on a scale of 2½ miles to an inch with a contour interval of 100 feet. It was issued in 1878.

New York.—From 1877 to 1884 the state of New York maintained a survey under Mr J. T. Gardiner. By this survey much triangulation of a high degree of accuracy was carried on, but no topographic work was executed. This state also maintained for many years an organization known as the Adirondack survey, which was instituted for the purpose of mapping the Adirondack region. No results, however, have been published beyond the positions of a few geodetic points and a large number of measurements of altitude.

Pennsylvania.—In Pennsylvania considerable money has been expended in topographic surveys for special purposes, but these have been on so large a scale and are so detailed in character that, areally, they are of slight importance. Most of them are on the scale of 1,600 feet to an inch, in contours 10 or 20 feet apart.

Wisconsin.—In Wisconsin some work was done in the southwestern part of the state by the state geologic survey. This work was based on the triangulation of the United States Coast and Geodetic survey. The Land office plats were utilized and the relief was expressed by 50-foot contours.

Minnesota.—Most of the area of Minnesota has been mapped by the state geologic survey on a scale of 4 miles to an inch, in 50-foot contours. The horizontal element of this map was furnished by the surveys of the General Land office, the vertical element being supplied from the profiles of railroads, supplemented by aneroid measurements.

Kentucky.—Drainage maps of many of the counties of Ken-

tucky have been prepared from traverses of the roads. These maps, which make no attempt to show the relief, are published on a scale of 2 miles to an inch.

California.—Between 1860 and 1870 the state of California maintained a geologic survey, which, like all other well regulated geologic surveys, found it necessary to devote much of its means to making topographic maps. By this organization a large part of central California was mapped, the greater part being on a scale of 6 miles to an inch, while a small area about the bay of San Francisco was on a scale of 2 miles to an inch, the relief in both series of maps being expressed by hachures.

New Jersey.—The only state which thus far has devised and put into operation a reasonable and economical plan for mapping its area is New Jersey. In 1877 this state commenced surveys for a map in connection with its geologic survey upon a plan and by methods very similar to those subsequently adopted in the geologic survey of the United States. The work was controlled by triangulation, in the main executed by the United States Coast and Geodetic survey and supplemented by the state survey. Minor control was furnished by means of traverse lines, and elevations were measured by spirit level and vertical angles. The resulting maps were published on a scale of one mile to an inch, in contours of 10 and 20 feet. When the state was about half surveyed the United States Geological survey undertook and carried the work through to completion upon the same plan and by the same methods which the state had originated.

Private Surveys.

In consequence of the neglect of the government in the matter of mapping this country, a wide field has been left open for private enterprise, and this field has been worked actively, but with curious results. Maps have been produced by private parties of practically every county in the northern states and of some counties of the southern states. The material for these maps has been obtained by traverse surveys along the roads. These maps are generically similar, and can be characterized in a very few words. They are essentially diagrams of roads. The houses along the roads are generally represented, together with the names of the owners, as it is found that this aids in the sale of the maps. Streams are but feebly represented, and relief is rarely shown.

Most of the railroads of the country have prepared maps of their lines showing at least the alignment of the road and in many cases the adjacent topography. They have prepared also profiles of their lines, and as this is an important element from the railroad point of view, much more attention has been given to this than to alignment.

There is one railroad company which has done more than this. The Northern Pacific railroad organized in 1882, and supported for three years, a survey of the country adjacent to its line. During these three years an area of 43,000 square miles was mapped in Montana and Washington. The methods used were similar to those of the Hayden survey, and the maps were designed for publication on a scale of 4 miles to an inch, in 200-foot contours. A part of this area has been published by the United States Geological survey.

Large areas of the eastern and most densely settled portion of the country are dependent entirely for their maps upon these road diagrams of counties and upon railroad maps and profiles. Such is the condition of all in which no public land surveys have been carried on, excepting the areas surveyed by the organizations above described. Thus, New York has no other maps besides these road diagrams, excepting some 2,000 square miles mapped by the United States Geological survey and some trifling additions by the United States Coast and Geodetic survey, while Pennsylvania is almost as poor in information regarding its topography.

The foregoing is a summary of the principal sources of geographic information concerning this country. It comprises practically all the material which is available for the compilation of a map of the United States. Of course, it is understood that in numerous cases the same area has been mapped by two or more organizations, thus affording opportunity for selection between them. In such cases, generally speaking, the later survey is the better, but in certain cases one piece of work is better for one purpose, and another for another purpose; one for one class of features, another for another class.

Relative Values of the Maps.

I propose to classify the body of diversified material in accordance with my estimate of its map value as expressed by the scale

upon which it is worthy of being represented, and thus to make an estimate of the area of the country which can be mapped from existing material upon each of several different scales.

The scales which I shall consider are 1, 2, 4, 8 and 16 miles to an inch. I exclude from consideration, for the present, the territory of Alaska.

On a scale of 1 mile to an inch, I find that only 100,000 square miles can be mapped, or about one-thirtieth of the area of the country (that area being a trifle over 3,000,000 square miles). This area possible to map includes the states of Massachusetts, Rhode Island, Connecticut and New Jersey and parts of numerous other states, mainly in the north. It includes a narrow strip of topography along the sea and lake coasts and the Mississippi and Missouri rivers. Two-thirds of this area is the work of the United States Geological survey, the balance being mainly that of the United States Coast and Geodetic survey.

On the scale of two miles to one inch, an area of 360,000 square miles has been surveyed by the Geological survey. No work adapted to representation upon that scale has ever been surveyed by other organizations. This area is widely scattered over the country. On this scale, therefore, an area of 460,000 square miles, or between one-fifth and one-sixth of the area of the country, can be mapped.

On a scale of 4 miles to one inch, the work of several organizations is included, viz, the exploration of the 40th parallel, the Hayden, Powell and Northern Transcontinental surveys, the Black hills survey, the 4-mile work of the Wheeler survey, and the 4-mile work of the United States Geological survey. The work of these organizations foots up, after deducting the overlapping areas, 460,000 square miles. All this area is in the Cordilleran region.

The area in the United States which can be mapped on a scale of 4 miles to one inch is, therefore, 920,000 square miles, or between one-third and one-fourth of the area of the country.

The original maps of this area are all of such character as to furnish material for representing all the three elements of a topographic map—the hydrography, the culture and the relief. They include most of those parts of the country which present high relief, including the southern Appalachians and most of the Cordilleran region. With the exception of 60,000 square miles furnished by the Wheeler survey, the relief of this area can be expressed quantitatively by contours.

The additional material which is adapted for smaller scales than those mentioned above shows, in the main, only hydrography and culture. Except for certain comparatively small areas, relief is not expressed at all. Still, the fact should not be overlooked that by far the greater proportion of the areas of high relief have been mapped upon the larger scales. In the remaining areas the relief element is not of so great importance.

On the scale of 8 miles to one inch, 1,530,000 square miles in addition to the areas above enumerated can be mapped. Of this area, 1,200,000 square miles are furnished by the maps of the General Land office and 100,000 square miles by county maps of the New England states, both of which classes of maps show no relief. 100,000 square miles are included from the 8-mile work of the Wheeler survey, which shows relief by hachures. The remainder comes in small areas from various sources. On this scale, therefore, a map including 2,450,000 square miles, or nearly five-sixths of the country, can be prepared, showing hydrography and culture.

A reduction of the scale to 16 miles to one inch, or about 1 : 1,000,000, increases but little the area possible to map. It adds only such parts of the southeastern states as are not already included, a portion of Texas, and some trifling areas in the Cordilleran region. The southeastern states can be represented on this scale by the aid of compilations of railroad maps, war maps, etc, notably the compilations made by the United States Coast and Geodetic survey during the civil war, the compilation of North Carolina made by Professor W. C. Kerr, and others.

A compilation from railroad surveys has been made of Texas, which, excepting for the western part of the state, will answer for this scale. In the Cordilleran region some small areas not included in later maps have been run over so closely by army expeditions and exploring parties as to be worthy of a place in this category.

Altogether, an area of about 2,800,000 square miles can be mapped on this scale. This leaves, besides Alaska, about 225,000 square miles which is too little known to be represented on a scale of 16 miles to one inch.

Much of this material is measurably deficient in the culture element, inasmuch as the surveys were executed many years ago and, in the interval which has elapsed, this element has changed greatly. This is particularly the case in the west, where

most of the present stage of development has been produced since the work of the Hayden, Wheeler, King and Powell surveys was done.

To bring this culture element up to date on maps of the two last-mentioned scales, viz, 8 and 16 miles to one inch, the postal-route maps are of great service—are, indeed, well-nigh invaluable.

Summary.

About 76 per cent of the area of the United States, exclusive of Alaska, has been surveyed by the general government on various scales, and fully 16 per cent more has been surveyed by other organizations or private parties in such manner as to yield useful maps, leaving barely 8 per cent of our territory unsurveyed. The mother maps of the country are based upon these surveys.

The areas represented on the various mother maps of the United States and available for compilation, classified by the scales on which they are worthy of reproduction, are summarized in the appended table. They are also shown graphically in the accompanying map of the United States forming plate 17.

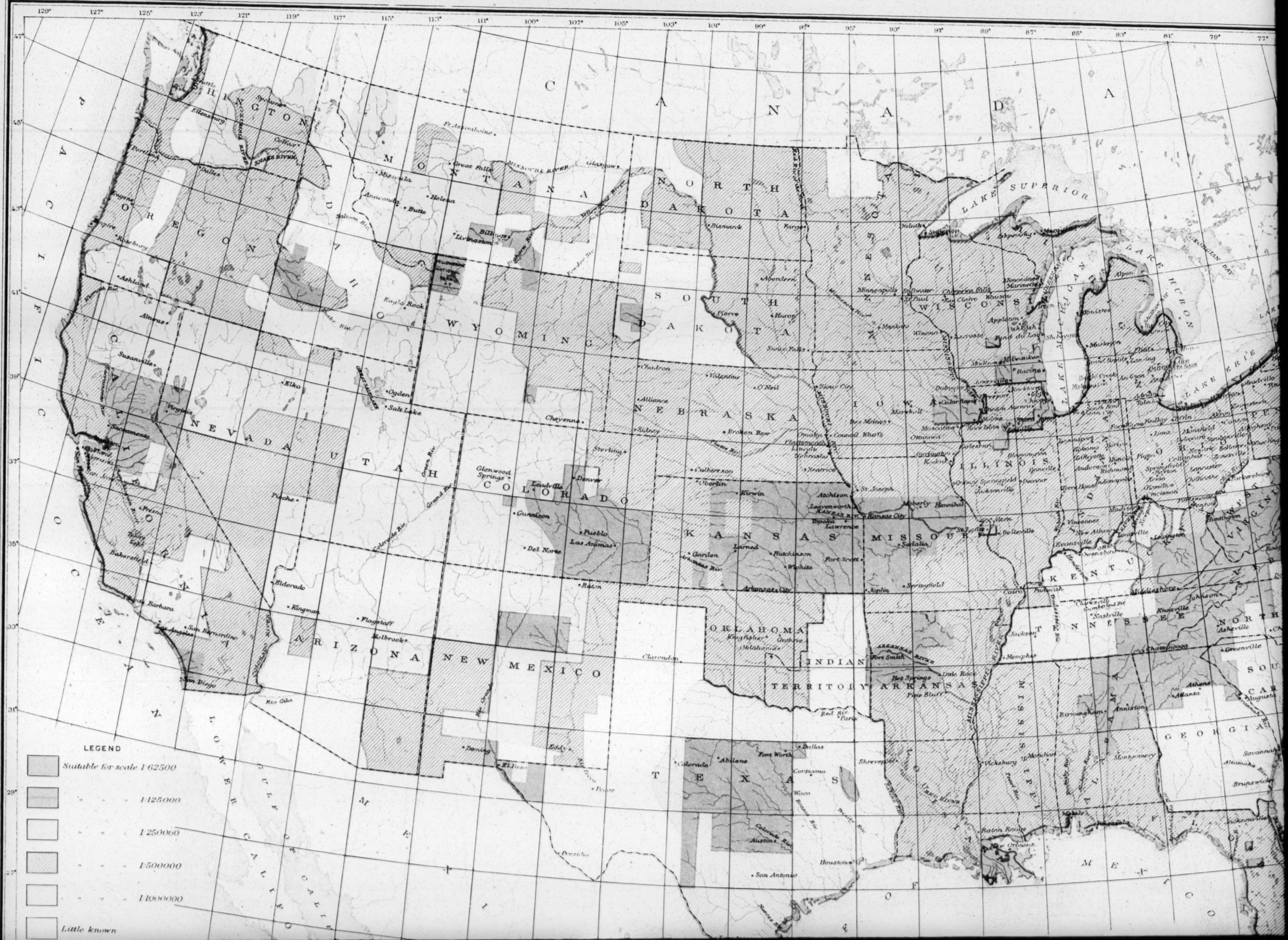
The scale of 1 : 1,000,000, or nearly 16 miles to one inch, has been adopted by the Geographic congress for mapping the earth, and it is therefore of interest to know how much of this country can be mapped on this scale, and where the areas are located concerning which our information is too scanty to warrant such representation. These areas may briefly be enumerated. They are:

Northern Maine.
Adirondack plateau of New York.
Southern Florida.
Most of Idaho and much of Montana.
The Cascade and Coast ranges of Oregon and Washington.
Western North Dakota and South Dakota.
Western Texas and southeastern New Mexico.

Areas represented on the various Mother Maps of the United States and available for Compilation on certain selected Scales.

Scale (miles to one inch).	Surveyed by—	Area in square miles.	Total area on scale.	Total available for scale.	Remarks.
1.	Coast and Geodetic survey Geological survey	34,000 66,000	100,000	100,000	All in contours.
2.	Geological survey	360,000	360,000	460,000	All in contours.
4.	Geological survey Powell survey Hayden survey Northern Transcontinental surv. King survey Wheeler survey	120,000 67,000 86,000 40,000 87,000 60,000	460,000	920,000	All but 60,000 in contours.
8.	Wheeler survey Land Office surveys Private surveys Miscellaneous surveys	100,000 1,200,000 100,000 30,000	1,530,000	2,450,000	860,000 in contours; 160,000 in hachures; remainder show no relief.
16.	Miscellaneous surveys	350,000	350,000	2,800,000	Same as above.

The territory of Alaska is still in the exploration stage. Its condition, as regards our geographic knowledge of its area, is quite similar to that of the Cordilleran region half a century ago. The shore line has been explored and laid down upon charts in its approximate position, and a part of the intricate shore line of southeastern Alaska has been mapped with some accuracy. The interior of the territory has been traversed by a number of expeditions, and thus a few routes have been surveyed; but far the greater part of the interior is still utterly unknown.


LEGEND
Suitable for scale 1:62500
" " " 1:125000
" " " 1:250000
" " " 1:500000
" " " 1:1000000
Little known
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
COLORADO
ARIZONA
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
INDIAN TERRITORY
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
CANADA
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
Columbia River
Snake River
Missouri River
Yellowstone River
Platte River
Arkansas River
Red River
Rio Grande
Colorado River
Mississippi River
Ohio River
Gulf of California
Gulf of Mexico
Seattle
Portland
San Francisco
Los Angeles
San Diego
Salt Lake
Denver
Chicago
St. Louis
New Orleans
Houston
Dallas
Minneapolis
St. Paul
Duluth
Milwaukee
Detroit
Cleveland
Buffalo
Pittsburgh
Cincinnati
Louisville
Nashville
Atlanta
Memphis
Kansas City
Omaha
Cheyenne
Boise
Spokane
Butte
Billings
Fargo
Bismarck
Pierre
Sioux Falls
Des Moines
Topeka
Wichita
Oklahoma City
Fort Worth
Austin
San Antonio
Albuquerque
Phoenix
Tucson
Las Vegas
Reno
Sacramento
San Jose
Fresno
Bakersfield
Eugene
Salem
Tacoma
Yakima
Walla Walla
Lewiston
Helena
Missoula
Great Falls
Glasgow
Havre
Miles City
Billings
Livingston
Bozeman
Anaconda
Dillon
Pocatello
Idaho Falls
Twin Falls
Boise
Nampa
Caldwell
Ontario
Baker
La Grande
Pendleton
The Dalles
Hood River
Astoria
Longview
Olympia
Bellingham
Everett
Wenatchee
Ellensburg
Coeur d'Alene
Kalispell
Whitefish
Glacier National Park
Yellowstone National Park
Grand Canyon
Yosemite
Sequoia
Death Valley
Mount Rainier
Crater Lake
Mount Shasta
Lassen Peak
Mount Whitney
Pikes Peak
Rocky Mountains
Sierra Nevada
Cascade Range
Coast Range
Great Salt Lake
Lake Tahoe
Lake Michigan
Lake Superior
Lake Huron
Lake Erie
Lake Ontario
Lake Okeechobee
Everglades
Okefenokee Swamp
Mississippi Delta
Chesapeake Bay
Delaware Bay
Hudson Bay
Puget Sound
Strait of Juan de Fuca
Strait of Georgia
Vancouver Island
Queen Charlotte Islands
Alaska
Yukon Territory
British Columbia
Alberta
Saskatchewan
Manitoba
Ontario
Quebec
New Brunswick
Nova Scotia
Prince Edward Island
Newfoundland
Labrador
Hudson Strait
Baffin Island
Greenland
Iceland
Bermuda
Cuba
Jamaica
Haiti
Puerto Rico
Bahamas
Florida Keys
Florida
Georgia
South Carolina
North Carolina
Virginia
West Virginia
Pennsylvania
New York
Vermont
New Hampshire
Maine
Massachusetts
Rhode Island
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New Jersey
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Delaware
Washington D.C.
Indiana
Ohio
Illinois
Iowa
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Arkansas
Louisiana
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Alabama
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Michigan
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North Dakota
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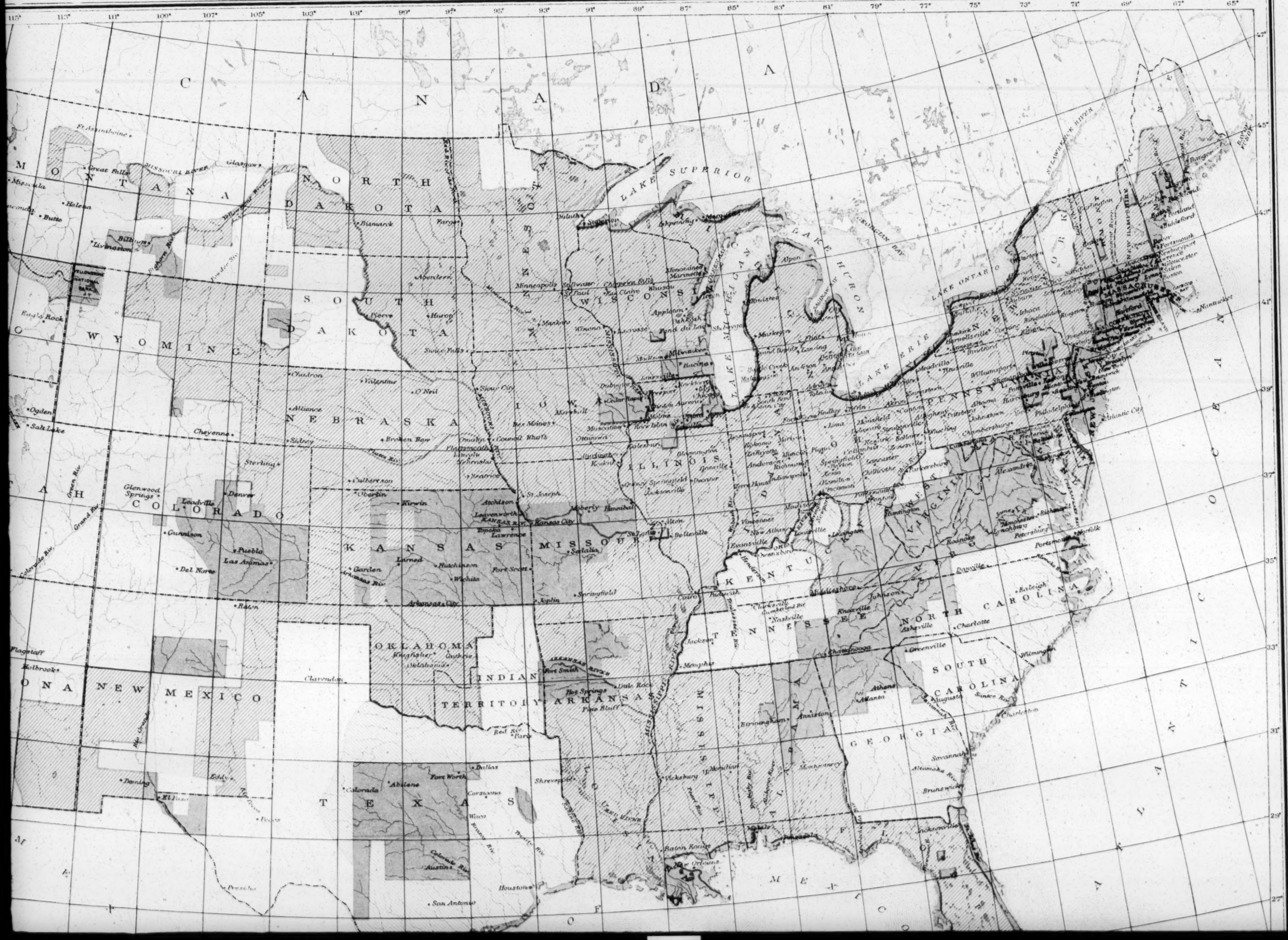
C A N A D A
M O N T A N A
N O R T H D A K O T A
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LAKE MICHIGAN
LAKE HURON
LAKE ERIE
LAKE ONTARIO
MISSOURI RIVER
MISSISSIPPI RIVER
OHIO RIVER
Ft Assiniboine
Great Falls
Missoula
Helena
Butte
Bismarck
Fargo
Duluth
Stillwater
Minneapolis
St Paul
Chippewa Falls
Winona
Prairie du Chien
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Corpus Christi
Eagle Pass
Del Rio
Laredo
Presidio
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Eddy
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Flagstaff
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Gila River
Colorado River
Green River
Grand River
Arkansas River
Platte River
Missouri River
Yellowstone River
Milk River
Powder River
Big Horn River
Rio Grande
Pecos River
Canadian River
Red River
Tennessee River
Cumberland River
Ohio River
Kanawha River
Monongahela River
Allegheny River
Susquehanna River
Delaware River
Hudson River
Mohawk River
Lake Champlain
Lake George
Lake Winnipeg
Lake of the Woods
Rainy Lake
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Georgian Bay
Lake St Clair
Detroit River
St Lawrence River
Ottawa River
Kingston
Toronto
Hamilton
Niagara Falls
Buffalo
Rochester
Syracuse
Albany
Utica
Ithaca
Binghamton
Elmira
Corning
Watkins
Auburn
Geneva
Oswego
Sackets Harbor
Watertown
Ogdensburg
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Augusta
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Concord
Manchester
Boston
Worcester
Springfield
Lowell
Salem
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Manitowoc
Two Rivers
Kewaunee
Door Peninsula
Sturgeon Bay
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UNITED STATES
SHOWING
ESTIMATES OF THE MAP VALUE
OF
EXISTING MOTHER MAPS.
BY
HENRY GANNETT
1892

Scale
100 0 100 200 300 400 500 600 Miles

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